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ADVANCED MATERIALS CENTER - BATTELLE

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DUPONT CHEMICALS

E. I. DU PONT DE NEMOURS & COMPANY, INC.

MIXED OXIDE - PROGRAM GOAL

- Determine the results obtained by using microgravity processing on commercially significant catalyst -- V-P-O System.

MIXED OXIDE - WHY MICROGRAVITY

- **Better control of catalyst synthetic process under microgravity**
- **Catalyst system selected is sensitive to preparation method used**
- **May obtain catalyst with improved selectivity**

MIXED OXIDE - SYNTHESIS PROCESS

- **Formation of droplet of precursor solution (inlet/nozzle)**
- **Evaporation of water (solvent) (furnace)**
- **Reaction of the V-P-O precursors (furnace)**
- **Configuration of droplet flow - - upflow to simulate microgravity.**

NOVEL RESULTS OF THE EARTH BASED PROGRAM

HTAD Catalyst Active for Maleic Anhydride

HTAD Process Capability to Alter Vanadium Valency

Synthesis of New P-V-O Metal Oxide Phase

Synthesis of High Surface Area Catalysts

Synthesis of Hollow Spheres with Superior Heat Transfer

Synthesis of Ultrafine Microstructured P-V-O Catalyst

Adjustment in Process Conditions to Alter Vanadium Valency

Synthesis of P-V-O Catalyst with no Micropores

Light Weight Spherical, Fluidizable Particles

MIXED OXIDE - DUPONT INTERESTS

- **Discovery**
- **Support from Business and Technology Centers**
 - **THF**
 - **Catalysis**
- **Interact with Leaders in Academia/Industry on Common Cause**
- **Leverage for Participants**